

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for monitoring a battery installed in a vehicle comprising:
 - utilizing a system provided within the vehicle to determine that a test of the battery should be performed when a first condition is satisfied, wherein the first condition relates to at least one of the prior usage of the battery and the current state of the battery;
 - electrically coupling at least one vehicle load to the battery; and
 - utilizing the system to analyze the response of the battery to the at least one vehicle load coupled to the battery;whereby the system may be utilized to determine the state of health of the battery.
2. (Original) The method of Claim 1 wherein the system provided within the vehicle comprises a battery monitoring and management system.
3. (Original) The method of Claim 1 wherein the step of determining that a test of the battery should be performed comprises determining that the battery has been newly installed in the vehicle.
4. (Original) The method of Claim 3 wherein the step of determining that a test of the battery should be performed comprises receiving an input signal from an input device indicating that the battery is newly installed in the vehicle.
5. (Original) The method of Claim 3 wherein the step of determining that a test of the battery should be performed comprises inferring that the battery is newly installed in the vehicle.

6. (Original) The method of Claim 5 wherein the step of inferring that the battery is newly installed in the vehicle comprises determining that at least one vehicle system has lost power.

7. (Original) The method of Claim 6 wherein the step inferring that the battery is newly installed in the vehicle further comprises testing the battery and comparing results of the testing with results of testing prior to the power loss to determine that a different battery has been installed.

8. (Original) The method of Claim 1 wherein the step of determining that a test of the battery should be performed comprises determining that a predetermined amount of time has passed.

9. (Original) The method of Claim 8 wherein the predetermined amount of time comprises a predetermined amount of time since the battery was last used.

10. (Original) The method of Claim 1 wherein the step of determining that a test of the battery should be performed comprises determining that the battery has been used for a predetermined number of vehicle starts.

11. (Original) The method of Claim 1 wherein the step of determining that a test of the battery should be performed comprises determining that the vehicle has experienced a predetermined number of weak starts.

12. (Original) The method of Claim 1 wherein the step of determining that a test of the battery should be performed comprises determining that the battery has been cycled a predetermined number of times.

13. (Previously Presented) The method of Claim 1 wherein the first condition comprises at least one of a voltage level of the battery approaching a predetermined threshold, a

current level of the battery approaching a predetermined threshold, and a slope of the voltage of the battery with time approaching a predetermined threshold.

14. (Original) The method of Claim 1 wherein the step of electrically coupling at least one vehicle load to the battery comprises sending a signal from the system to couple the at least one vehicle load to the battery.

15. (Original) The method of Claim 1 wherein the step of electrically coupling at least one vehicle load to the battery comprises electrically coupling at least one relatively low current load and at least one relatively high current load to the battery.

16. (Original) The method of Claim 15 wherein the step of electrically coupling at least one relatively low current load and at least one relatively high current load to the battery comprises applying a first load to the battery, removing the first load from the battery, and applying a second load to the battery.

17. (Original) The method of Claim 15 wherein the step of electrically coupling at least one relatively low current load and at least one relatively high current load to the battery comprises concurrently applying both the low current load and the high current load to the battery.

18. (Original) The method of Claim 15 wherein the relatively high current load is between approximately 3 and 20 amperes and the relatively low current load is between approximately 20 and 100 amperes.

19. (Original) The method of Claim 1 wherein the at least one vehicle load comprises at least one load applied by a device selected from the group consisting of a window defroster, an air conditioning system, a windshield wiper motor, a vehicle seat heater, a vehicle seat adjustment mechanism, and a vehicle entertainment system.

20. (Original) The method of Claim 1 wherein the at least one vehicle load comprises at least one load resulting from an extended engine crank.

21. (Original) The method of Claim 1 wherein the at least one vehicle load comprises at least one load provided by a sensor coupled to a vehicle communication system.

22. (Original) The method of Claim 21 wherein the sensor coupled to a vehicle communication system comprises a current sensor.

23. (Original) The method of Claim 1 wherein the step of analyzing the response of the battery to the at least one vehicle load coupled to the battery comprises analyzing the voltage response of the battery to the at least one vehicle load.

24. (Original) The method of Claim 1 wherein the step of analyzing the response of the battery to the at least one vehicle load coupled to the battery comprises analyzing the current response of the battery to the at least one vehicle load.

25. (Original) The method of Claim 1 wherein the step of analyzing the response of the battery to the at least one vehicle load coupled to the battery comprises analyzing the charge current acceptance of the battery when the engine of the vehicle is in operation and the alternator is providing sufficient voltage to charge the battery.

26. (Original) The method of Claim 1 wherein the step of analyzing the response of the battery to the at least one vehicle load coupled to the battery comprises comparing an input signal received from the battery to historical information for the battery.

27. (Original) The method of Claim 1 wherein the step of analyzing the response of the battery to the at least one vehicle load coupled to the battery comprises comparing an input signal received from the battery to information included in a lookup table.

28. (Original) The method of Claim 1 further comprising providing an output signal if the battery is determined by the system to satisfy a second condition.

29. (Original) The method of Claim 28 wherein the output signal comprises a signal to disconnect one or more loads from the battery.

30. (Original) The method of Claim 28 wherein the output signal comprises at least one signal selected from the group consisting of a signal to instruct a voltage regulator to apply a greater charge to the battery and a signal to alter the idle speed of the vehicle.

31. (Original) The method of Claim 28 wherein the output signal is at least one of a visual and an audible signal.

32. (Original) The method of Claim 28 wherein the step of providing an output signal if the battery is determined by the system to satisfy a second condition comprises determining that the battery cannot support engine cranking for a predetermined amount of time.

33. (Original) The method of Claim 28 wherein the step of providing an output signal if the battery is determined by the system to satisfy a second condition comprises determining that at least one of the current and the voltage of the battery declines during application of the at least one vehicle load by a predetermined amount.

34. (Previously Presented) The method of Claim 33 wherein the output signal comprises at least one of a visual signal and an audible signal.

35. (Previously Presented) A system for monitoring a vehicle comprising:
a battery installed within a vehicle;
a system that may be selectively electrically coupled to the battery for carrying out a method comprising:

utilizing a system provided within the vehicle to determine that a test of the battery should be performed when a first condition is satisfied, wherein the first condition relates to at least one of the prior usage of the battery and the current state of the battery;
electrically coupling at least one vehicle load to the battery; and

utilizing the system to analyze the response of the battery to the at least one vehicle load coupled to the battery;

whereby the system may be utilized to determine the state of health of the battery; and

a vehicle electrical system comprising a plurality of loads that may be selectively electrically coupled to and decoupled from the battery.

36. (Original) The system of Claim 35 wherein the vehicle electrical system comprises a plurality of relatively high current loads and a plurality of relatively low current loads.

37. (Original) The system of Claim 35 wherein the plurality of loads comprise at least one vehicle load selected from the group consisting of a window defroster, an air conditioning system, a windshield wiper motor, a vehicle seat heater, a vehicle seat adjustment mechanism, a vehicle entertainment system, and a sensor coupled to a vehicle communication system.